



SLOVENSKI STANDARD
oSIST prEN IEC 60317-93:2023
01-marec-2023

Specifikacije za posebne vrste navijalnih žic - 93. del: S poliestrom ali poliesterimidom prevlečena bakrena žica s pravokotnim prerezom, emajlirana s poliamidimidom, razred 220

Specifications for particular types of winding wires - Part 93: Polyester or polyesterimide overcoated with polyamide-imide enamelled rectangular copper wire, class 220

ITeH STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-2c70bc2e1fb/osist-pr-en-iec-60317-93-2023>

Ta slovenski standard je istoveten z: prEN IEC 60317-93:2023

ICS:

29.060.10	Žice	Wires
77.150.30	Bakreni izdelki	Copper products

oSIST prEN IEC 60317-93:2023 **en**



55/1940/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 60317-93 ED1	
DATE OF CIRCULATION: 2023-01-20	CLOSING DATE FOR VOTING: 2023-04-14
SUPERSEDES DOCUMENTS: 55/1926/CD, 55/1935/CC	

IEC TC 55 : WINDING WIRES	
SECRETARIAT: United States of America	SECRETARY: Mr Mike Leibowitz
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 2	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input checked="" type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant "in some countries" clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

Specifications for particular types of winding wires – Part 93: Polyester or polyesterimide overcoated with polyamide-imide enamelled rectangular copper wire, class 220

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

1	CONTENTS		
2	FOREWORD		3
3	INTRODUCTION		5
4	1 Scope		6
5	2 Normative references		6
6	3 Terms, definitions, general notes and appearance		6
7	3.1 Terms and definitions		6
8	3.2 General notes		7
9	3.2.1 Methods of test		7
10	3.2.2 Winding wire		7
11	3.3 Appearance		7
12	4 Dimensions		7
13	5 Electrical resistance		7
14	6 Elongation		7
15	7 Springiness		7
16	8 Flexibility and adherence		7
17	9 Heat shock		7
18	10 Cut-through		7
19	11 Resistance to abrasion		7
20	12 Resistance to solvents		8
21	13 Breakdown voltage		8
22	14 Continuity of insulation		8
23	15 Temperature index		8
24	16 Resistance to refrigerants		8
25	17 Solderability		8
26	18 Heat or solvent bonding		8
27	19 Dielectric dissipation factor		8
28	20 Resistance to hydrolysis and to transformer oil		8
29	21 Loss of mass		8
30	23 Pin hole test		8
31	30 Packaging		8
32	Bibliography		9

33

34

35

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATIONS FOR PARTICULAR
TYPES OF WINDING WIRES –**
**Part 93: Polyester or polyesterimide overcoated
with polyamide-imide enamelled rectangular copper wire, class 220**
FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60317-93 has been prepared by IEC technical committee 55: Winding wires.

The text of this standard is based on the following documents:

FDIS	Report on voting
XX/XX/XX	55/XXXX/XX

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This International Standard is to be read in conjunction with IEC 60317-0-2 (2020).

A list of all parts in the IEC 60317 series, published under the general title Specifications for particular types of winding wires, can be found on the IEC website.

88 The numbering of clauses in this standard is not continuous from Clauses 21 through 30 in
89 order to reserve space for possible future wire requirements prior to those for wire packaging.

90 The committee has decided that the contents of this document will remain unchanged until the
91 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
92 the specific document. At this date, the document will be

- 93 • reconfirmed,
- 94 • withdrawn,
- 95 • replaced by a revised edition, or
- 96 • amended.

97

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN IEC 60317-93:2023](https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023)

<https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023>

98

INTRODUCTION

99 This part of IEC 60317 belongs to a series of standards which deals with insulated wires used
100 for windings in electrical equipment. It is composed of the following series:

101 1) *Winding wires – Test methods* (IEC 60851 series);

102 2) *Specifications for particular types of winding wires* (IEC 60317 series);

103 3) *Packaging of winding wires* (IEC 60264 series).

104

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN IEC 60317-93:2023](https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023)

<https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023>

105
106
107
108
109
110

SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

Part 93: Polyester or polyesterimide overcoated with polyamide-imide enamelled rectangular copper wire, class 220

111 **1 Scope**

112 This International Standard specifies the requirements of enamelled rectangular copper winding
113 wire of class 220 with a dual coating. The underlying coating is based on polyester or
114 polyesterimide resin, which may be modified providing it retains the chemical identity of the
115 original resin and meets all specified wire requirements. The superimposed coating is based on
116 polyamide-imide resin.

117 NOTE A modified resin is a resin that has undergone a chemical change, or contains one or more additives to
118 enhance certain performance or application characteristics.

119 The range of nominal conductor dimensions covered by this standard is:

120 – width: min. 2,0 mm max. 25,0 mm;

121 – thickness: min. 0,80 mm max. 10,0 mm.

122 Wires of grade 1 and grade 2 are included in this specification and apply to the complete range
123 of conductors.

124 The specified combinations of width and thickness as well as the specified width/thickness ratio
125 are given in IEC 60317-0-2.

<https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28->

126 **2 Normative references**

127 The following documents are referred to in the text in such a way that some or all of their content
128 constitutes requirements of this document. For dated references, only the edition cited applies.
129 For undated references, the latest edition of the referenced document (including any
130 amendments) applies.

131 IEC 60317-0-2:2020, Specifications for particular types of winding wires – Part 0-2: General
132 requirements – Enamelled rectangular copper wire

133 **3 Terms, definitions, general notes and appearance**

134 **3.1 Terms and definitions**

135 For the purposes of this document, the terms and definitions given in IEC 60317-0-2 and the
136 following apply.

137 ISO and IEC maintain terminological databases for use in standardization at the following
138 addresses:

139 • IEC Electropedia: available at <http://www.electropedia.org/>

140 • ISO Online browsing platform: available at <http://www.iso.org/obp>

141 **3.2 General notes**

142 **3.2.1 Methods of test**

143 Subclause 3.2.1 of IEC 60317-0-2 applies. In case of inconsistencies between IEC 60317-0-2
144 and this document, the latter shall prevail.

145 **3.2.2 Winding wire**

146 Class 220 is a thermal class that requires a minimum temperature index of 220 and a heat
147 shock temperature of at least 240 °C.

148 The temperature in degrees Celsius corresponding to the temperature index is not necessarily
149 that at which it is recommended that the wire be operated and this will depend on many factors,
150 including the type of equipment involved.

151 **3.3 Appearance**

152 Subclause 3.3 of IEC 60317-0-2:2020 applies.

153 **4 Dimensions**

154 Clause 4 of IEC 60317-0-2:2020 applies.

155 **5 Electrical resistance**

156 Clause 5 of IEC 60317-0-2:2020 applies.

157 **6 Elongation**

158 Clause 6 of IEC 60317-0-2:2020 applies.

159 **7 Springiness**

160 Clause 7 of IEC 60317-0-2:2020 applies.

161 **8 Flexibility and adherence**

162 Clause 8 of IEC 60317-0-2:2020 applies.

163 **9 Heat shock**

164 Clause 9 of IEC 60317-0-2:2020 applies, where the minimum heat shock temperature shall be
165 240 °C.

166 **10 Cut-through**

167 Test requirements and procedures under consideration.

168 **11 Resistance to abrasion**

169 Test inappropriate.

170 12 Resistance to solvents

171 Clause 12 of IEC 60317-0-2:2020 applies.

172 13 Breakdown voltage

173 Clause 13 of IEC 60317-0-2:2020 applies, where the elevated temperature shall be 220 °C.

174 14 Continuity of insulation

175 Test inappropriate.

176 15 Temperature index

177 Clause 15 of IEC 60317-0-2:2020 applies, where the minimum temperature index shall be 220.

178 16 Resistance to refrigerants

179 Test inappropriate.

180 17 Solderability

181 Test Inappropriate.

182 18 Heat or solvent bonding

183 Test inappropriate.

184 19 Dielectric dissipation factor

185 Test inappropriate.

186 20 Resistance to hydrolysis and to transformer oil

187 Test under consideration.

188 21 Loss of mass

189 Test inappropriate.

190 23 Pin hole test

191 Test inappropriate.

192 30 Packaging

193 Clause 30 of IEC 60317-0-2:2020 applies.

STANDARD PREVIEW
(standards.iteh.ai)

[SIST prEN IEC 60317-93:2023](https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023)

<https://standards.iteh.ai/catalog/standards/sist/539c87fc-4806-47c4-8d28-a2c59be2e1fb/osist-pren-iec-60317-93-2023>